Old-Age Pensions, Labour Withdrawal, and the Health Puzzle

Nishant Singh*
PhD Scholar
Indira Gandhi Institute of Development Research, Mumbai

Abstract

Old-age social pensions are central to social protection in ageing developing economies, yet their effects may extend beyond income support. This paper studies whether pension eligibility changes late-life work and everyday life in rural North India. I exploit a policy contrast between two neighbouring states: Haryana, where men become pension-eligible at age 60, and Punjab, where eligibility begins at age 65. Using CPHS data on rural men, I estimate a difference-in-differences design comparing individuals just above and below the Haryana eligibility threshold. The results show that pension eligibility leads to a marked withdrawal from work. The paper then documents an unexpected health pattern among men who were healthy before age 60. These findings suggest that old-age pensions should be evaluated not only as income transfers, but also as interventions that shape the transition into old age, daily routines, and later-life wellbeing.

JEL Codes: H55, I12, I38, J14, J26, O15
Keywords: Old-age pension; social protection; labour-force participation; health; rural India; difference-in-differences

*Email: nishant@igidr.ac.in. I am grateful to Dr. Swati Sharma for her guidance and valuable suggestions, and to faculty members and colleagues at the Indira Gandhi Institute of Development Research (IGIDR) for helpful discussions and comments. This research received no external financial support. I receive the regular institutional stipend provided to PhD students at IGIDR. I have no relevant financial relationships or other conflicts of interest to disclose.

1 Introduction

Cash transfers and social pensions are central instruments in the contemporary social-protection agenda. The World Bank defines social protection as public measures that protect individuals and families against economic and social distress, including social assistance, social insurance, and labour-market programmes. It reports that each dollar transferred to poor families can generate an estimated local multiplier of about 2.5 dollars (World Bank, 2025). The objective of this paper is to study the implications of specific social-assistance programmes targeted toward older adults in a developing-country context. In ageing societies, non-contributory old-age pensions are especially important because they provide income support to people who have worked largely outside formal contributory systems and therefore often lack pension coverage or other retirement benefits (Barrientos, 2009; Case and Deaton, 1998; International Labour Organization, 2021).

This issue is particularly salient for India because of two features. First, India has both a rapidly increasing share and a rising absolute number of older persons. The *India Ageing Report 2023* estimates that India had 149 million persons aged 60 and above in 2022, equal to 10.5 percent of the population, and projects that this number will rise to 347 million by 2050, or 20.8 percent of the population (United Nations Population Fund, 2023). Second, India has a large informal workforce: the *India Employment Report 2024* notes that nearly 82 percent of workers are in the informal sector and nearly 90 percent are informally employed, limiting access to contributory retirement benefits for many older adults (Institute for Human Development and International Labour Organization, 2024; International Labour Organization, 2021). Under the National Social Assistance Programme, the Indira Gandhi National Old Age Pension Scheme provides a central pension to below-poverty-line persons aged 60 and above. States add their own eligibility rules and top-up benefits over this central component (Ministry of Rural Development, Government of India, 2026). This federal structure creates meaningful variation in effective pension eligibility across states.

A large literature shows that social assistance and social pensions do more than transfer income. They relax liquidity constraints, reduce poverty, smooth consumption, and improve household welfare, with documented spillovers to food consumption, schooling, health-care use, and intergenerational transfers (Duflo, 2003; Case and Deaton, 1998; Edmonds, 2006; Ardington et al., 2009; Bastagli et al., 2016). At the same time, because pension income changes the budget constraint of older adults and their families, it may also affect labour supply, private transfers, intra-household allocation, and time use (Bertrand et al., 2003; Galiani et al., 2016; Juarez and Pfutze, 2015). Thus, the welfare consequences of social pensions are theoretically ambiguous. Reduced work may protect older adults from physically demanding employment, but it may also weaken rou-

tine, social interaction, physical activity, and work-related identity. Existing studies have therefore answered important questions on poverty, consumption smoothing, household allocation, private transfers, and labour supply. However, less is known about whether pension-induced withdrawal from work itself has consequences for later-life health and related behavioural channels. The closest paper to this study is Kaushal (2014), which examines social pensions in India and provides important evidence on old-age support and labour-supply responses. This paper builds on that literature by studying whether pension eligibility reduces labour-force participation among older men and whether this withdrawal from work is associated with changes in health outcomes in rural North India. This is interesting because old-age work in rural India is often informal, reflecting the wider dominance of self-employment, casual work, and informal employment in the Indian labour market (Institute for Human Development and International Labour Organization, 2024). Such work generates income, but it may also provide routine, physical movement, social contact, and identity. A pension may therefore improve economic security while simultaneously changing the daily routine structure in ways that are relevant for the individual's health.

The empirical design exploits a policy contrast between two neighbouring North Indian states, Haryana and Punjab. Males in Haryana are eligible for old-age pension from age 60 years, subject to domicile, income, and other scheme conditions (Department of Social Justice and Empowerment, Government of Haryana, 2024). Punjab sets the old-age pension age rule for men at 65 years, with income and landholding restrictions (Department of Social Security and Women and Child Development, Government of Punjab, 2017). For rural men aged 60–64, this creates a clean comparison for state-pension eligibility. Haryana men are age-eligible, while Punjab men are not yet age-eligible. I therefore estimate an intention-to-treat difference-in-differences design comparing Haryana and Punjab men aged 60–64, relative to men aged 55–59.

The main results are threefold. First, eligibility is associated with a large reduction in work. Employment falls by 25.0 percentage points, labour-force participation falls by 25.5 percentage points, and out-of-labour-force (OLF) status rises by 25.5 percentage points. Second, among men who were healthy before age 60, pension eligibility is associated with poorer reported health, higher regular medication use, and higher medicine expenditure. These results are interesting because these people have no reason to retire from the labour force as there is no mandatory retirement age and the scheme also doesn't ask them to retire for getting monthly pension. IF they fullfill other eligibilty criterias, they can still work while availing the monthly pension. Mechanism checks show that pension eligibility improves overall expenditure stability but also changes individuals activity and consumption patterns. Current work falls, home-based self-care time rises, and toxic-goods expenditure increases. These findings suggest a nuanced welfare interpretation as pension economic stability, but the transition away from work may generate health-

relevant behavioural changes.

The paper contributes to three literatures. First, it adds to evidence that cash transfers and social pensions can alter household allocation as well as labour supply rather than merely transfer income. Second, it contributes to the literature on the developing countries old-age pensions and elderly welfare. Third, it connects the social-protection literature to evidence on retirement and health, which shows that withdrawal from work can have ambiguous effects depending on activity, health investment, and social interaction (Dave et al., 2008a; Coe and Zamarro, 2011; Behncke, 2012). The central argument of this paper is that social pensions for older adults should be evaluated not only in terms of income security, but also through their effects on labour withdrawal and health outcomes.

2 Policy and Institutional Background

2.1 Old-age pensions in India's social-protection architecture

India's old-age pension system combines central assistance with state-level social-pension programmes. At the national level, the Indira Gandhi National Old Age Pension Scheme (IGNOAPS), implemented under the National Social Assistance Programme, provides assistance to below-poverty-line persons aged 60 years and above. The central contribution is Rs. 200 per month for persons aged 60–79 years and Rs. 500 per month for persons aged 80 years and above (Ministry of Rural Development, Government of India, 2026). State governments can supplement this central assistance and may also operate their own broader pension schemes. Therefore, an eligible person may receive both central and state old-age pension benefits, subject to satisfying the relevant eligibility criteria. This institutional structure creates substantial variation across Indian states in pension amounts, eligibility conditions, income criteria, and implementation rules. Such state-level variation provides a useful setting for studying the behavioural effects of social-pension eligibility among older individuals.

This paper exploits the policy contrast between two neighbouring and socio-economically comparable states, Haryana and Punjab. Haryana's Old Age Samman Allowance is framed as a scheme for needy older persons, particularly poorer agricultural labourers, rural artisans, Scheduled Castes and Backward Classes, and small or marginal farmers (Department of Social Justice and Empowerment, Government of Haryana, 2024). The official eligibility rules require the applicant, irrespective of gender, to be at least 60 years old, domiciled and resident in Haryana, and to have combined annual income from all sources, including that of the spouse, not exceeding Rs. 3,00,000. The state allowance was increased to Rs. 3,000 per month from January 2024 (Department of Social Justice and Empowerment, Government of Haryana, 2024). In contrast, Punjab's old-age pen-

sion scheme specifies a higher age threshold for men: men become eligible at 65 years and above, while women become eligible at 58 years and above. The Punjab scheme also applies income and landholding criteria, including an annual income ceiling and limits on land ownership (Department of Social Security and Women and Child Development, Government of Punjab, 2017).

Administrative data also show that old-age pensions constitute a large and fiscally significant component of social protection in both states. [1] In Haryana, the official scheme records about 17.85 lakh beneficiaries in 2023–24, with a budget allocation of Rs. 5,538 crore (Department of Social Justice and Empowerment, Government of Haryana, 2024). In Punjab, government-reported figures indicate that Rs. 3,368.89 crore had been distributed to 22.68 lakh elderly beneficiaries up to December 2024, while Rs. 4,000 crore was earmarked for old-age pensions in the 2024–25 financial year (News On AIR, 2025). These figures indicate that old-age pensions are not marginal welfare programmes in either state. Rather, they are large-scale recurring transfers that cover a substantial elderly population.

2.2 Identification Strategy

The identification strategy exploits the difference in the male eligibility age for old-age pension benefits between Haryana and Punjab. In Haryana, men become eligible for the Old Age Samman Allowance at age 60 (Department of Social Justice and Empowerment, Government of Haryana, 2024), whereas in Punjab men become eligible for the old-age pension only at age 65 (Department of Social Security and Women and Child Development, Government of Punjab, 2017). Therefore, rural men aged 60–64 in Haryana form the age-state group exposed to pension eligibility, while rural men aged 60–64 in Punjab are not yet age-eligible under the male eligibility rule. Men aged 55–59 in both states are used as the pre-eligibility comparison group. The empirical contrast is therefore between older men just above age 60 and men just below age 60, across two neighbouring states with different pension-eligibility thresholds.

The analysis is restricted to rural men for two reasons. First, rural employment in India is less likely to be governed by a sharp formal retirement rule. Recent PLFS evidence shows that rural employment remains dominated by self-employment and casual work, while regular wage/salaried employment is much more common in urban areas (Periodic Labour Force Survey Annual Report, 2026). This is important for the present design because pension eligibility is more likely to affect labour-supply decisions when older workers are not already constrained by a formal retirement age. In contrast, in urban and formal salaried jobs, exits from employment may partly reflect institutional

[1] The aggregate figures reported here are administrative figures and refer to different reporting periods across the two states. They are therefore used only to document the scale of the programmes, and not for a direct fiscal comparison between Haryana and Punjab.

retirement rules rather than behavioural responses to pension eligibility. Second, the analysis focuses on men because elderly female labour-market participation is much lower and more strongly shaped by unpaid domestic work, social norms, and measurement issues. Restricting the sample to rural men therefore provides a cleaner setting in which observed changes in labour-force participation or employment around age 60 are more plausibly related to pension eligibility rather than to formal retirement rules or gender-specific participation constraints.

This design does not eliminate all age-related confounding. Individuals aged 60–64 may differ from those aged 55–59 in health, household responsibilities, wealth, or preferences for work. However, by comparing the same age bands across Haryana and Punjab, and by focusing on rural men whose employment is less likely to be governed by formal retirement rules, the design makes a pension-eligibility interpretation more plausible than in a sample dominated by formal salaried workers.

The estimates should be interpreted as intention-to-treat effects of being in an age-state eligibility cell, not as treatment-on-the-treated effects of actual pension receipt. This distinction is important because actual benefit receipt may depend on documentation, means tests, administrative approval, bank linkage, and local implementation.

3 Data and Measurement

The empirical analysis uses the Consumer Pyramids Household Survey (CPHS), collected by the Centre for Monitoring Indian Economy. CPHS is a longitudinal household survey that repeatedly surveys a large panel of households and provides member-level and household-level information, including employment, health and consumption variables (Centre for Monitoring Indian Economy, 2026). This structure makes it useful for studying labour-market outcomes, health reporting, and expenditure behaviour around age-based pension eligibility.

The CPHS data must, however, be interpreted cautiously. Independent assessments have raised concerns about sample design, attrition, non-response, and the under-representation of poorer and mobile households (Pais and Rawal, 2021; Somanchi, 2021). For this reason, the paper does not use CPHS to estimate nationally representative elderly-welfare aggregates. Instead, it uses CPHS for a focused within-survey comparison between neighbouring states around a policy-relevant age threshold.

The preferred sample consists of rural men aged 55–64 in Haryana and Punjab. Men aged 55–59 are the pre-eligibility group and men aged 60–64 forma the main comparison group between Haryana and Punjab eligibility window. Men aged 65 and above are excluded from the main comparison because Punjab men also become age-eligible for pension at 65. The primary labour-market outcomes are employment, out-of-labour-force status, and labour-force participation. The health outcomes are self-reported unhealthy

Table 1: Summary Statistics Among Pre-Eligibility Rural Men, Ages 56–59

Variable	Haryana mean	Punjab mean	Difference	p-value	N
Age	56.939	56.996	-0.057	0.366	1,053
Healthy	0.965	0.986	-0.021	0.028	1,041
Regular medication	0.082	0.109	-0.027	0.156	962
Literate	0.894	0.886	0.009	0.656	1,041
SC/ST	0.237	0.356	-0.119	0.000	1,053
OBC	0.249	0.131	0.118	0.000	1,053
Total expenditure	13,454.802	14,898.086	-1,443.284	0.000	1,053
Food expenditure	6,365.154	6,500.009	-134.855	0.293	1,053

Notes: Values are sample means for the pre-eligibility age band. Difference is Haryana mean minus Punjab mean. The p-value is from a two-sample test of equality of means.

status, regular medication, and inverse-hyperbolic-sine (IHS) [2] medicine expenditure. Consumption mechanisms are measured using household-level expenditure categories, including total expenditure, food expenditure, essential expenditure, medical expenditure, toxic or unhealthy goods expenditure, expenditure shares, borrowing, and volatility measures.

Table 1 presents summary staistics for rural men aged 56–59, before the Haryana age-60 eligibility threshold. The two states are close in age and regular medication use, but there are statistically meaningful differences in some health-expenditure and social-composition variables.

4 Empirical Methodology

The main empirical strategy is a difference-in-differences-style age–state eligibility design, following standard programme-evaluation logic (Angrist and Pischke, 2009; Imbens and Wooldridge, 2009). The design compares the difference in outcomes between Haryana and Punjab across the pre-eligibility and post-threshold age groups. In Haryana, men become pension-eligible at age 60, whereas men in Punjab remain ineligible until age 65. The estimating equation is

$$Y_{idat} = \alpha + \beta \left(Haryana_d \times A_{it}^{60\text{–}64} \right) + \mu_d + \lambda_t + \delta_a + X'_{idat}\pi + \varepsilon_{idat}, \tag{1}$$

where Y_{idat} is an outcome for individual i, residing in district d, observed at single-year age a in interview month t. $Haryana_d$ is an indicator equal to one for individuals residing in Haryana, and $A_{it}^{60\text{–}64}$ is an indicator equal to one when the individual is aged 60–64. The interaction $Haryana_d \times A_{it}^{60\text{–}64}$ identifies the age–state cell exposed to pension

[2]The inverse hyperbolic sine transformation (IHS) is defined as $\text{asinh}(x) = \ln\left(x + \sqrt{x^2+1}\right)$. It is commonly used for expenditure or income variables because it behaves similarly to the logarithmic transformation for large positive values while remaining defined at zero. This is useful for medicine and similar expenditure, where many observations may report zero spending.

eligibility.

The coefficient β is the intention-to-treat effect of being in the pension-eligible age group in Haryana, relative to the corresponding change across age groups in Punjab. The specifications include district fixed effects, μ_d, interview-month fixed effects, λ_t, single-year age fixed effects, δ_a, and a vector of individual and household controls, X_{idat}. The Haryana main effect is absorbed by the district fixed effects, while the main effect of belonging to the 60–64 age group is absorbed by the single-year age fixed effects. Standard errors are clustered at the individual level to account for repeated observations of the same person.

For the health-transition analysis, the estimation sample is further restricted to rural men who reported being healthy in their last observed interview before age 60. This restriction reduces the concern that the estimated post-threshold health differences are driven by poor health that was already present before pension eligibility.

I also estimate an age-event profile to examine whether the Haryana–Punjab outcome gap changes around the age-60 eligibility threshold. The event-profile specification is

$$Y_{idat} = \alpha + \sum_{k \in \mathcal{K},\, k \neq -1} \beta_k \left[Haryana_d \times \mathbb{1}\left(Age_{it} - 60 = k\right) \right] + \mu_d + \lambda_t + \delta_a + X'_{idat}\pi + \varepsilon_{idat}, \quad (2)$$

where k indexes the individual's age relative to age 60 and $\mathcal{K}$ denotes the set of relative-age indicators included within the estimation window. The omitted category is $k = -1$, corresponding to age 59. Therefore, each coefficient β_k measures the Haryana–Punjab outcome gap at relative age k compared with the Haryana–Punjab gap at age 59.

The pre-threshold coefficients provide a diagnostic check for whether Haryana and Punjab displayed systematic age-profile differences before the eligibility threshold. Because the event variable is age rather than calendar time, these estimates should be interpreted as age-profile or pre-threshold checks rather than as a conventional event study based on the timing of a policy change.

Mechanism specifications subsequently introduce activity or consumption variables alongside the treatment indicator. Because these variables may themselves be affected by pension eligibility, the corresponding estimates are interpreted as suggestive mechanism evidence rather than as formal causal mediation effects.

5 Results

The results are organised around the core story: pension eligibility reduces labour supply, reported health worsens, and the main mechanisms are tested through routine/activity

and consumption behaviour. Various mechanism tables should be interpreted as mechanism evidence, not as formal causal mediation estimates.

5.1 Pension eligibility reduces labour force participation

Table 2 presents the main labour-market result from the latest output run. The interaction coefficient Haryana × Age 60–64 is -0.250 for employment, +0.255 for being out of the labour force, and -0.255 for LFPR. All estimates are statistically significant at the 95 percent confidence level. The magnitudes imply a large fall of about 25 percentage points in labour-market participation among Haryana men in the pension-eligible age window relative to the Punjab comparison group.

Table 2: Main Labour-Market Effects

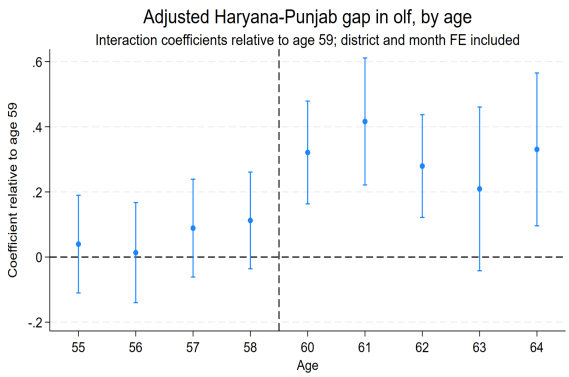
	(1) Employed	(2) OLF	(3) LFPR
Haryana × Age 60–64	-0.250***	0.255***	-0.255***
	(0.0356)	(0.0353)	(0.0353)
Age 60–64	-0.410***	0.418***	-0.417***
	(0.0569)	(0.0568)	(0.0570)
N	29,882	29,882	29,882
R^2	0.261	0.268	0.265

Notes: Standard errors are in parentheses. Reference group is Punjab, ages 55–59. Controls include single-year age dummies, interview-month fixed effects, district fixed effects, grouped education, caste controls, Hindu/Sikh dummy, marital status, and available household-composition controls. LFPR uses one definition only.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 1 complements the regression estimates by showing the age pattern directly. Panel A shows that LFPR remains high before age 60 in both states, but Haryana falls sharply after the eligibility threshold. Panel B shows the adjusted Haryana–Punjab OLF gap is statistically insignificant from zero before age 60, but becomes positive after the pension-eligibility threshold. This suggests that eligibility is associated with a relative increase in labour-market withdrawal in Haryana, rather than reflecting a smooth ageing pattern alone.



(a) LFPR by age



(b) Haryana–Punjab OLF gap by age

Figure 1: Labour-Market Age Profiles Around the Pension-Eligibility Threshold

Notes: The vertical dashed line marks age 60, the Haryana pension-eligibility threshold. Panel (b) plots adjusted Haryana minus Punjab out-of-labour-force interaction coefficients relative to age 59, with district and interview-month fixed effects included. These figures are descriptive and complement the difference-in-differences estimates in Table 2.

5.2 Pension eligibility is associated with worse reported health

Table 3 restricts the sample to men who were healthy in their last observed pre-60 interview. This restriction is used to reduce the possibility of reverse causality, where individuals may leave the labour force because of pre-existing poor health rather than because of pension eligibility. Haryana × Age 60–64 increases the probability of reporting unhealthy status by 0.150 and decreases the probability of reporting healthy status by the same magnitude. It also increases regular medication by 0.159 and inverse-hyperbolic-sine (IHS) medicine expenditure by 0.619. This strengthens the health-puzzle interpretation because the effect is not limited to a simple reporting category. It is accompanied by medication and medicine-expenditure responses.

Table 3: Health Transition Among Men Healthy Before Age 60

	(1) Unhealthy	(2) Regular medication	(3) IHS medicine expenditure
Haryana × Age 60–64	0.150***	0.159***	0.619***
	(0.0253)	(0.0407)	(0.115)
N	15,826	14,943	15,826
R^2	0.185	0.225	0.201

Notes: Standard errors are in parentheses. Sample is restricted to rural men who reported healthy = 1 in their last observed interview before age 60. A positive coefficient in column 1 means greater transition into reported unhealthy status after 60 in Haryana. Main clean window: ages 56–64. Age 65 is excluded because Punjab men also become pension-eligible at 65. Controls and fixed effects are the same as in Table 2. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2 adds the self-assessed healthy event-study check. The coefficients before age

60 are close to zero and statistically insignificant, while the post-threshold coefficients are negative, especially from ages 61 to 64. This visual pattern supports the interpretation that the deterioration in self-assessed health becomes visible after the Haryana eligibility threshold rather than being driven by a strong pre-threshold divergence.

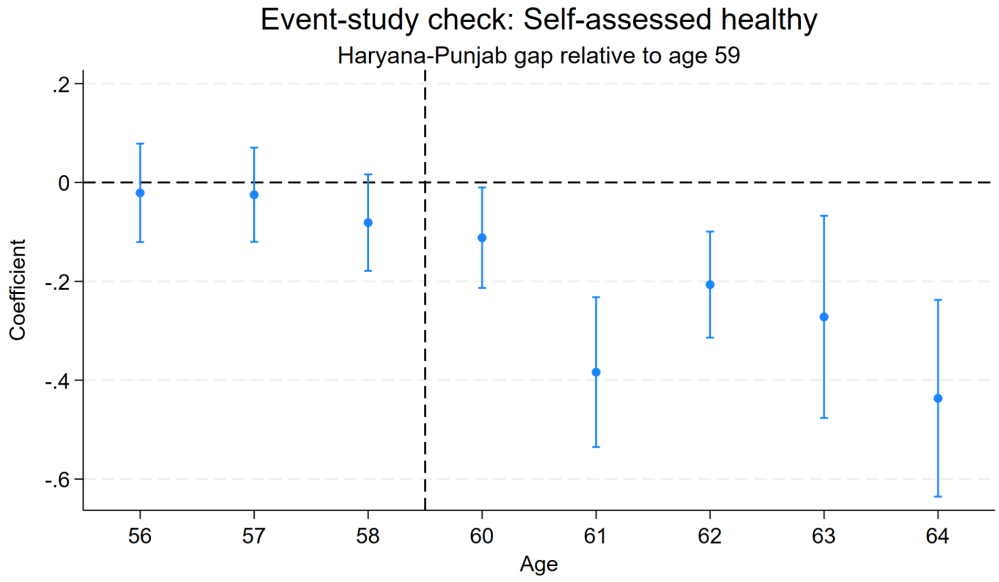
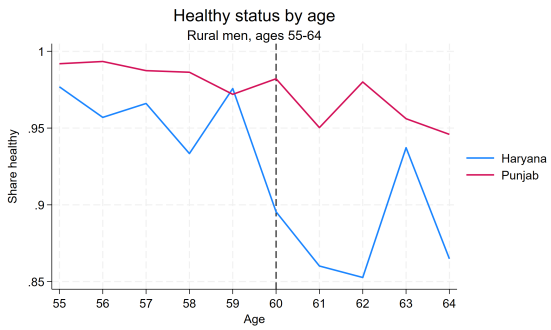


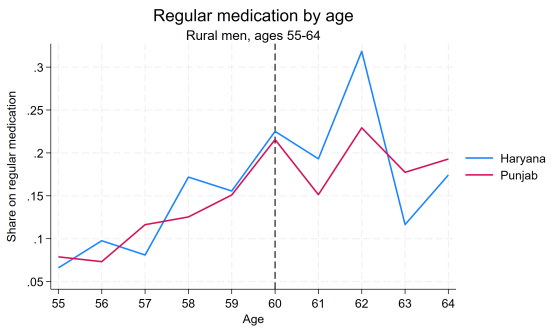
Figure 2: Event-Study Check for Self-Assessed Healthy Status

{*Notes:* The figure plots the adjusted Haryana–Punjab gap in self-assessed healthy status relative to age 59. Coefficients are descriptive event-study checks and should be read together with Table 3.

Figure 3 gives the corresponding descriptive health and medication age profiles. Panel A shows that Haryana's healthy-reporting profile falls after age 60 relative to Punjab. Panel B shows that regular medication use rises with age and becomes especially salient in the older age range. These age profiles are not causal estimates, but they make the health puzzle visually transparent and motivate the transition-based regressions in Table 3.



(a) Healthy status by age



(b) Regular medication by age

Figure 3: Health and Medication Age Profiles

Notes: The vertical dashed line marks age 60. The dotted vertical line marks age 65, when Punjab men also become pension-eligible. These figures are descriptive age profiles for rural men and should be read together with the regression estimates in Table 3.

5.3 Retirement as a health-shock mechanism

Table 4 directly examines routine and activity outcomes. Pension eligibility reduces current working status by 0.197. The latest output gives weaker and statistically insignificant effects for household work time, employer work time, travel, outdoor sports, and time with friends. It does, however, show a statistically significant increase in self-care or home-based activity. The table therefore supports a cautious activity interpretation: the strongest mechanism evidence is work withdrawal and a shift toward home-based self-care time, rather than a precisely estimated decline in every social or outdoor activity.

Table 4: Retirement-as-Health-Shock Mechanism

Panel A: Work and travel outcomes				
	(1) Currently working	(2) IHS household work time	(3) IHS employer work time	(4) IHS travel time
Haryana × Age 60–64	-0.197***	-0.0420	-0.0260	0.0111
	(0.0340)	(0.0474)	(0.0281)	(0.0289)
N	29,256	24,436	18,360	24,436
R^2	0.336	0.247	0.159	0.225

Panel B: Social, leisure, and self-care outcomes					
	(5) IHS outdoor sports	(6) IHS time with friends	(7) IHS indoor entertainment	(8) IHS religious activity	(9) IHS self-care/ activity
Haryana × Age 60–64	-0.0356	-0.0433	0.0111	-0.0116	0.114***
	(0.0233)	(0.0338)	(0.0400)	(0.0225)	(0.0198)
N	24,436	24,436	24,436	24,436	24,436
R^2	0.294	0.332	0.290	0.383	0.378

Notes: Standard errors are in parentheses. Sample includes rural men in the clean ages 56–64 window. Controls include single-year age dummies, interview-month fixed effects, district fixed effects, marital status, education, caste, and religion when available. Time-use outcomes are inverse-hyperbolic-sine transformations. This is a mechanism check, not a standalone proof of causality. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.4 Consumption mechanism among men healthy before age 60

Table 5 examines household consumption composition among men who were healthy before age 60. Pension eligibility is associated with a 0.151 increase in the probability of any toxic spending, a 1.022 increase in IHS toxic spending, and a 0.0194 increase in toxic expenditure share. At the same time, IHS healthy-food expenditure also rises, while the healthy-food share is positive but not statistically significant. Therefore, the consumption mechanism is not simply a general worsening of diet quality. The strongest potentially health-damaging margin is toxic spending.

Figure 4 provides an event-study view of the toxic-share mechanism. The coefficients are noisy, and several confidence intervals include zero, so the figure should not be read as a standalone causal proof. Its value is diagnostic: it shows that the toxic-share gap does not mechanically trend upward before age 60 and that some post-threshold coefficients are positive. This is consistent with, but weaker than, the regression evidence in Table 5.

Table 5: Consumption Mechanism Among Men Healthy Before Age 60

	(1) Any toxic spending	(2) IHS toxic spending	(3) Toxic share	(4) IHS healthy food	(5) Healthy food share
Haryana × Age 60–64	0.151***	1.022***	0.0194***	0.109**	0.0161
	(0.0386)	(0.254)	(0.00634)	(0.0496)	(0.0100)
N	15,826	15,826	15,826	15,826	15,826
R^2	0.314	0.326	0.403	0.469	0.399

Notes: Standard errors are in parentheses. Sample is restricted to men who reported healthy in the last observed pre-60 interview. Consumption variables are measured at the household level. Binary processed/sugary-food and healthy-food indicators with no identifying variation are omitted from the main table to keep the presentation clean. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

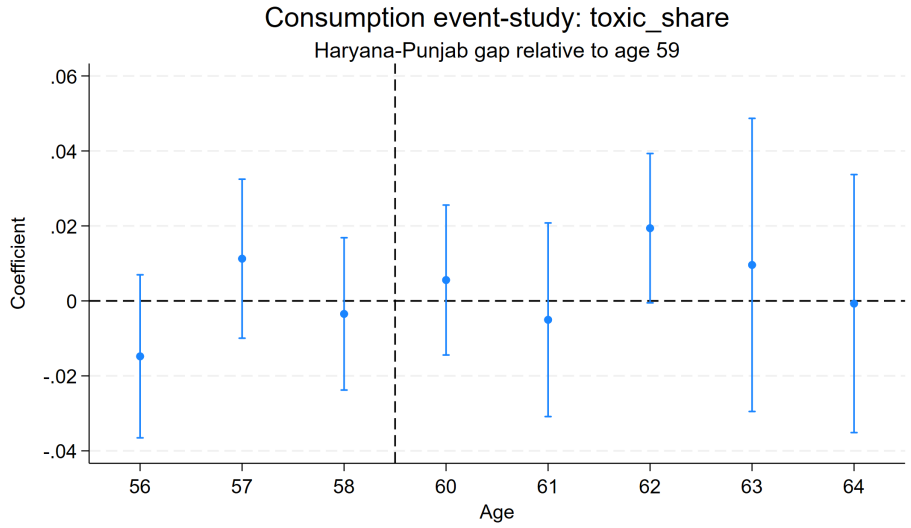


Figure 4: Event-Study Pattern for Toxic Expenditure Share

Notes: The figure plots the Haryana–Punjab gap in toxic expenditure share relative to age 59. The vertical dashed line marks age 60. Confidence intervals are shown around point estimates. Because the estimates are noisy, this figure is used as mechanism evidence and not as the main proof of the toxic-consumption channel.

5.5 Consumption smoothing among men healthy before age 60

Table 6 provides evidence on consumption smoothing and expenditure stability. In the latest output, pension eligibility does not significantly raise total, food, or essential expenditure levels in the healthy-before-60 sample. However, it significantly reduces total-expenditure volatility, reduces the probability of a 20 percent total-expenditure drop, reduces food-expenditure volatility, and reduces the probability of a 20 percent food-expenditure drop. This is the key welfare result from the revised smoothing table: the evidence is stronger for reduced expenditure instability than for higher expenditure levels.

Table 6: Consumption Smoothing Among Men Healthy Before Age 60

Panel A: Expenditure levels and shares

	(1) IHS total exp.	(2) IHS food exp.	(3) IHS essential exp.	(4) Essential share	(5) Food share
Haryana × Age 60–64	0.0106	0.0344	-0.000325	-0.0119	0.00527
	(0.0417)	(0.0400)	(0.0422)	(0.00916)	(0.00748)
N	21,836	21,836	21,836	21,836	21,836
R^2	0.476	0.415	0.462	0.182	0.444

Panel B: Expenditure volatility and stability

	(6) Volatility: total exp.	(7) Total exp. drop ≥20%	(8) Total exp. stable ≥90%	(9) Volatility: food exp.	(10) Food exp. drop ≥20%	(11) Food exp. stable ≥90%
Haryana × Age 60–64	-0.0279***	-0.0257**	0.0167	-0.0129**	-0.0166**	-0.00249
	(0.0100)	(0.0113)	(0.0133)	(0.00592)	(0.00685)	(0.0110)
N	20,949	20,949	21,836	20,949	20,949	21,836
R^2	0.095	0.104	0.078	0.219	0.123	0.164

Panel C: Borrowing outcomes

	(12) Any borrowing	(13) Borrowing for consumption	(14) Borrowing for medical care
Haryana × Age 60–64	0.0598	0.0132	0.000917
	(0.0374)	(0.0288)	(0.00713)
N	21,836	21,836	21,836
R^2	0.316	0.264	0.037

Notes: Standard errors are in parentheses. Sample is restricted to men healthy in the last observed pre-60 interview. Spending outcomes use the inverse hyperbolic sine transformation. Negative coefficients on volatility and drop variables indicate smoother expenditure paths. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6 Interpretation and Policy Discussion

The results suggest that pension eligibility has effects beyond income support. In Haryana, rural men aged 60–64 experience a large decline in employment and labour-force partic-

ipation relative to comparable men in Punjab. This finding is consistent with the main evidence on non-contributory old-age pensions, which shows that age-based transfers can reduce labour supply among older adults. In the Indian context, Kaushal (2014) finds that social pensions reduce employment among elderly and near-elderly men. Similar responses have been documented in Latin American pension programmes (Juarez and Pfutze, 2015; Galiani et al., 2016). However, this result should not be read as evidence that social assistance generally discourages work. The present setting is different because the transfer is explicitly linked to old age. The relevant margin is therefore not general work disincentive, but the transition from work-based old age to pension-supported old age.

This transition is especially important in the rural informal sector. Haryana's pension scheme does not require beneficiaries to stop working, and rural men are generally not covered by a formal retirement age. Therefore, the sharp decline in work after age 60 cannot be explained simply by mandatory retirement rules. One possible interpretation is an income effect: the pension relaxes the household budget constraint and allows older men to reduce physically demanding work. A second interpretation is that age 60 becomes a behavioural reference point. Studies of retirement behaviour show that official retirement ages can act as focal points even when financial incentives alone do not fully explain retirement timing (Knoll, 2011; Behaghel and Blau, 2012). In Haryana, pension eligibility may therefore convert age 60 into a socially meaningful threshold. A man becomes not only older, but also officially pension-eligible.

This matters because retirement is not a single, clearly defined event. Denton and Spencer (2009) argue that retirement may refer to non-employment, reduced work intensity, pension receipt, self-reported retired status, or some combination of these. In formal employment, retirement is often an institutional exit. In rural informal employment, it is more gradual and ambiguous. It may mean stopping casual wage work, reducing farm work, shifting to household-based activity, or becoming more dependent on family income and public transfers. The meaning of retirement may also differ across groups. For men doing physically demanding work, withdrawal may bring relief from strain. For small farmers or self-employed workers, retirement may be partial rather than complete. For men whose identity is tied to being a worker or provider, exit from work may also reduce status, routine, and social interaction.

The health results should be understood in this context. Among men who were healthy before age 60, pension eligibility is associated with worse self-reported health, higher regular medication use, and higher medicine expenditure. This does not mean that pensions are harmful in a simple sense. Rather, it suggests that the health effect of retirement-like withdrawal is ambiguous. The retirement-health literature also reaches mixed conclusions. Retirement may improve health when it reduces stress or exposure to difficult working conditions (Coe and Zamarro, 2011). But it may worsen health if

it reduces physical activity, routine, social engagement, or purpose (Dave et al., 2008b; Behncke, 2012). Sociological theories of ageing make a similar point. Atchley (1989) emphasises continuity in later life, while Ekerdt (1986) argues that retirement is often socially organised around remaining active and purposeful. In this framework, work matters not only as a source of income, but also as a source of structure, movement, social contact, and identity.

The mechanism results are consistent with this interpretation, although they should be read cautiously. Pension eligibility clearly reduces current work and shifts time toward home-based self-care or home-based activity. The evidence is weaker for large changes in travel, outdoor sports, time with friends, or religious activity. Therefore, the mechanism is not a general collapse of all activity, but a reallocation away from work and toward the home. The consumption results add another possible channel. Pension eligibility is associated with higher toxic-goods expenditure and a higher toxic-expenditure share. At the same time, the pension improves expenditure stability and is not associated with a broad decline in essential consumption. The welfare effect is therefore mixed: pension eligibility appears to reduce economic insecurity, but some post-eligibility changes in routine and consumption may have adverse health implications.

The policy implication is not that old-age pensions should be reduced or made conditional on continued work. Such an interpretation would be inappropriate in a setting where many older workers have spent their lives in informal employment without contributory retirement benefits. Social pensions remain an important income floor. The implication is instead that pensions should be connected to a broader elderly-welfare strategy. Pension delivery can be used as a contact point for preventive health check-ups, screening for non-communicable diseases, counselling on tobacco and alcohol use, and referral to primary health services. Panchayat-level activity groups, community centres, self-help groups, and local health workers can also help ensure that withdrawal from work does not translate into inactivity or isolation.

More broadly, the findings connect old-age pensions to the wider architecture of social assistance. Non-contributory programmes are not only instruments for poverty reduction; they also shape household behaviour, time use, health investment, and social participation. Therefore, old-age pensions should be coordinated with food support, public health services, disability assistance, community care, and other social-protection programmes. In rural ageing economies, welfare depends not only on whether older persons receive income support, but also on what replaces work after pension eligibility. A fuller evaluation of social pensions should therefore consider both their income-smoothing role and their effects on daily life, routine, health behaviour, and social participation.

A Appendix:Additional Mechanism-Style Checks

This appendix reports mechanism-style regressions that add post-treatment activity or consumption variables to unhealthy-reporting models.

Table A1: Does Routine and Activity Explain Unhealthy Reporting?

	(1) Unhealthy	(2) Unhealthy	(3) Unhealthy
Haryana × Age 60–64	0.149***	0.143***	0.138***
	(0.0210)	(0.0207)	(0.0322)
Currently working		-0.0328***	0
		(0.00972)	(.)
IHS work for household			-0.0174**
			(0.00733)
IHS work for employer			-0.0380**
			(0.0155)
IHS travel time			-0.0149
			(0.00989)
IHS outdoor sports			-0.00704
			(0.0111)
IHS time with friends			-0.0229***
			(0.00773)
IHS indoor entertainment			-0.0268***
			(0.00793)
N	21,836	21,836	14,364
R^2	0.182	0.185	0.155

Notes: Standard errors are in parentheses. Sample is restricted to men healthy in their last observed pre-60 interview. Activity variables are post-treatment controls; interpret as mechanism evidence only. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Does Consumption Explain Unhealthy Reporting?

	(1) Unhealthy	(2) Unhealthy	(3) Unhealthy
Haryana × Age 60–64	0.150***	0.147***	0.145***
	(0.0253)	(0.0252)	(0.0251)
IHS toxic spending		0.00498***	
		(0.00142)	
IHS processed/sugary food spending		0.00807	
		(0.00905)	
IHS healthy food spending		-0.0245**	
		(0.0124)	
Any toxic spending			0.0292***
			(0.00920)
Any processed/sugary food spending			0
			(.)
Any healthy food spending			0
			(.)
N	15,826	15,826	15,826
R^2	0.185	0.190	0.188

Notes: Standard errors are in parentheses. Sample is restricted to men healthy before age 60. Consumption variables are post-treatment controls and household-level measures. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Does Consumption Smoothing Explain Unhealthy Reporting?

	(1) Unhealthy	(2) Unhealthy	(3) Unhealthy	(4) Unhealthy
Haryana × Age 60–64	0.155***	0.155***	0.156***	0.158***
	(0.0216)	(0.0216)	(0.0219)	(0.0218)
Panel A: Consumption levels and shares				
IHS total expenditure		-0.0474		-0.0352
		(0.0459)		(0.0626)
IHS food expenditure		-0.0584		-0.0677
		(0.0395)		(0.0464)
IHS essential expenditure		0.0955**		0.0941**
		(0.0436)		(0.0452)
Food share		0.0914		0.107
		(0.0961)		(0.108)
Essential share		-0.124**		-0.125**
		(0.0493)		(0.0503)
Panel B: Volatility, expenditure drops, and borrowing				
Volatility: total exp.			0.00616	0.000720
			(0.00480)	(0.00845)
Total exp. drop ≥20%			0.00564	0.00606
			(0.00601)	(0.00632)
Total exp. stable ≥90%			-0.00149	-0.00197
			(0.00382)	(0.00402)
Volatility: food exp.			-0.00533	0.00237
			(0.0145)	(0.0156)
Food exp. drop ≥20%			0.00377	0.00245
			(0.00887)	(0.00890)
Food exp. stable ≥90%			-0.00180	0.000622
			(0.00530)	(0.00572)
Any borrowing				-0.0107*
				(0.00596)
Borrowing for consumption				-0.00653
				(0.00801)
Borrowing for medical				0.0310
				(0.0713)
N	21,836	21,836	20,949	20,949
R^2	0.174	0.175	0.177	0.179

Notes: Standard errors are in parentheses. Sample is restricted to men healthy in the last observed pre-60 interview. Consumption and smoothing variables are post-treatment controls, so the estimates should be interpreted as mechanism evidence only. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

References

Angrist, J. D. and Pischke, J.-S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, Princeton.

Ardington, C., Case, A., and Hosegood, V. (2009). Labor supply responses to large social transfers: Longitudinal evidence from south africa. *American Economic Journal: Applied Economics*, 1(1):22–48.

Atchley, R. C. (1989). A continuity theory of normal aging. *The Gerontologist*, 29(2):183–190.

Barrientos, A. (2009). Social pensions in low-income countries. *Pensions: An International Journal*, 14(2):110–118.

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., and Pellerano, L. (2016). Cash transfers: What does the evidence say? a rigorous review of programme impact and of the role of design and implementation features.

Behaghel, L. and Blau, D. M. (2012). Framing social security reform: Behavioral responses to changes in the full retirement age. *American Economic Journal: Economic Policy*, 4(4):41–67.

Behncke, S. (2012). Does retirement trigger ill health? *Health Economics*, 21(3):282–300.

Bertrand, M., Mullainathan, S., and Miller, D. (2003). Public policy and extended families: Evidence from pensions in south africa. *The World Bank Economic Review*, 17(1):27–50.

Case, A. and Deaton, A. (1998). Large cash transfers to the elderly in south africa. *Economic Journal*, 108(450):1330–1361.

Centre for Monitoring Indian Economy (2026). Consumer pyramids household survey. Consumer Pyramids dx database. Centre for Monitoring Indian Economy, Mumbai.

Coe, N. B. and Zamarro, G. (2011). Retirement effects on health in europe. *Journal of Health Economics*, 30(1):77–86.

Dave, D., Rashad, I., and Spasojevic, J. (2008a). The effects of retirement on physical and mental health outcomes. *Southern Economic Journal*, 75(2):497–523.

Dave, D., Rashad, I., and Spasojevic, J. (2008b). The effects of retirement on physical and mental health outcomes. *Southern Economic Journal*, 75(2):497–523.

Denton, F. T. and Spencer, B. G. (2009). What is retirement? a review and assessment of alternative concepts and measures. *Canadian Journal on Aging / La Revue canadienne du vieillissement*, 28(1):63–76.

Department of Social Justice and Empowerment, Government of Haryana (2024). Old age samman allowance scheme. Government of Haryana scheme portal. Accessed 15 May 2026.

Department of Social Security and Women and Child Development, Government of Punjab (2017). Notification no. 3/4/2015-2wc/1000017: Criteria for old age pension and related social security schemes. Government of Punjab notification. Dated 13 June 2017.

Duflo, E. (2003). Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in south africa. *The World Bank Economic Review*, 17(1):1–25.

Edmonds, E. V. (2006). Child labor and schooling responses to anticipated income in south africa. *Journal of Development Economics*, 81(2):386–414.

Ekerdt, D. J. (1986). The busy ethic: Moral continuity between work and retirement. *The Gerontologist*, 26(3):239–244.

Galiani, S., Gertler, P., and Bando, R. (2016). Non-contributory pensions. *Labour Economics*, 38:47–58.

Imbens, G. W. and Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, 47(1):5–86.

Institute for Human Development and International Labour Organization (2024). India employment report 2024: Youth employment, education and skills.

International Labour Organization (2021). World social protection report 2020–22: Social protection at the crossroads – in pursuit of a better future.

Juarez, L. and Pfutze, T. (2015). The effects of a noncontributory pension program on labor force participation: The case of 70 y más in mexico. *Economic Development and Cultural Change*, 63(4):685–713.

Kaushal, N. (2014). How public pension affects elderly labor supply and well-being: Evidence from india. *World Development*, 56:214–225.

Knoll, M. A. Z. (2011). Behavioral and psychological aspects of the retirement decision. *Social Security Bulletin*, 71(4):15–32.

Ministry of Rural Development, Government of India (2026). National social assistance programme: Indira gandhi national old age pension scheme. Government of India NSAP portal. Accessed 15 May 2026.

News On AIR (2025). Punjab govt distributes Rs. 3,368 cr as pension to 22.68 lakh beneficiaries. https://newsonair.gov.in/punjab-govt-distributes-%E2%82%B93368-cr-as-pension-to-22-68-lakh-beneficiaries-until-dec/. Accessed: 16 June 2026.

Pais, J. and Rawal, V. (2021). Cmie's consumer pyramids household surveys: An assessment. Technical Report 2021-03, Society for Social and Economic Research.

Periodic Labour Force Survey Annual Report (2026). Periodic Labour Force Survey Annual Report, 2025. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2246009. National Statistical Office, Government of India. Accessed: 16 June 2026.

Somanchi, A. (2021). Missing the poor, big time: A critical assessment of the consumer pyramids household survey. *SocArXiv Working Paper*, pages 1–35.

United Nations Population Fund (2023). India ageing report 2023.

World Bank (2025). State of social protection report 2025: The 2-billion-person challenge.